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Tribal internship students energize alternative fuel science

Tribal lands make up only five percent of the United States' total land area, but represent enormous potential for the production of renewable energy. The 55 million acres of land across the nation controlled by Native American tribes can potentially produce an estimated 535 billion kilowatt-hours of electricity from wind power and more than 17 trillion kilowatt-hours from solar energy. These projections are equivalent to more than four times the amount of electricity generated annually in the United States, and represent new economic and employment opportunities for many Native American communities.

The U.S. Department of Energy's (DOE) Argonne National Laboratory, together with the U.S. Department of the Interior (DOI), are working together to help educate future tribal leaders on energy resource development and environmental evaluations by offering several hands-on learning opportunities such as Tribal Energy Internships and the Indian Education Renewable Energy Challenge.

To recruit and train the next generation of tribal energy and natural resource management professionals, Argonne hosts a unique summer internship program – now in its second year – specifically for American Indian and Alaska Native college students. This year's program includes interns participating from the following tribes: Quapaw, Navajo, Shoshone Bannock, Seneca Nation, Confederated Salish and Kootenai, and Eastern Shoshone, Cherokee.

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Tribal energy internships—add one

"Energy production is fundamental to our quality of life and economic security," said Tony Dvorak, director of Argonne's Environmental Science division. "Despite being rich in renewable resource potential, many tribes struggle with poverty and soaring unemployment. This program helps develop renewable energy resources locally that can create jobs and revenue opportunities for tribal communities."

Students spend their summer working at Argonne on a variety of research projects that focus on both renewable and non-renewable energy sources as well as environmental evaluation and analysis. From developing wind and solar energy to learning about fuel cells and hydrogen storage, students have the opportunity to work directly with Argonne mentors on a wide range of technologies while analyzing their potential impacts and economic opportunities.

For example, three students from Little Big Horn College and their instructor completed a Geographic Information Systems (GIS) internship to determine potential sites for a coal to liquids (CTL) plant on the Crow Indian Reservation in Montana. Two other students, one from the University of New Mexico and one from San Juan College, compared costs and environmental impacts associated with coal, natural gas, wind and solar energy generation technologies, including land use, water use and greenhouse gas emissions.

"Our mission is to inspire and educate our nation's future scientists and engineers," said Harold Myron, director of Argonne's educational programs division. "We are thrilled to be a part of such an important program and to provide the hands-on training and experience that will help increase the use of clean energy technologies and promote energy independence."

The internship program also led to the creation of the Indian Education Renewable Energy Challenge. This year's contest focused on designing and building an efficient portable wind turbine system; prizes were awarded at both the high school and college level.

"This is a great way for students to translate what they are learning in the classroom to real-world applications for developing renewable energy sources," said Myron. "It's a fun and exciting way for teachers and students to learn more about energy and the environment."

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Tribal energy internships—add two

The winning teams and their tribes were also invited to present their projects to Secretary of the Interior Ken Salazar at a special awards ceremony held in Washington D.C. In attendance were students from the Oneida Nation High School located in Oneida, WI, which won the high-school prize, and Southwestern Indian Polytechnic Institute (SIPI) from Albuquerque, NM, and the College of Menominee Nation from Keshena, WI, which tied for first place at the college-level.

Another important, freely available resource is the Tribal Energy and Environmental Information Clearinghouse (TEEIC), which can be accessed online at teeic.anl.gov. The portal creates a knowledge base to help tribes and tribal organizations develop environmental analysis and evaluation programs and processes that further their energy and economic goals. "Energy development must evolve in a manner that maximizes effective use of available energy resources while ensuring the preservation of our natural and environmental resources," Dvorak said.

In addition to environmental best practices, links to federal and state laws and guidelines for conducting environmental assessments, the site also includes information on the impacts of different traditional and renewable energy development and infrastructure projects. These programs are funded by the DOI Office of Indian Energy and Economic Development (IEED) to support American Indians and Alaska Natives in managing their natural resources and tribal energy opportunities. In accordance with the Energy Policy Act of 2005, there are several resources available to promote tribal energy sufficiency and economic growth and employment on tribal lands through the development of renewable energy and energy efficiency technologies.

Tribal energy internship—add three

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